DRISTEEM®
The humidification experts

Vaporstream®

Electric-to-Steam
Humidification System

PRODUCT CATALOG

Versatile electric humidification

Figure 2-1:
Vaporstream humidifier

DRI-STEEM® offers a complete line of Vaporstream models to meet a wide range of humidification needs.

Application versatility with Vaporstream®

From providing comfort humidity to meeting the strictest clean-room requirements, the Vaporstream electric humidifier is an industrial-grade unit designed to meet the humidification demands of any building environment.

Broad capacity range. The largest Vaporstream has a capacity of 285 lbs/hr (129 kg/h). Link up to 16 units together for capacity up to 4,650 lbs/hr (2068 kg/h).

Sophisticated heater control. Designed to work with any voltage, model configurations take advantage of a wide range of heater sizes and staging options. The result is consistent and reliable RH control to ±1%.

Extremely versatile. The Vaporstream can use tap, softened or DI/RO water; has numerous available dispersion options, accommodating a wide range of absorption requirements; and is available with several optional features, including an outdoor enclosure.

Precise control with Vapor-logic3!

Vaporstream features Vapor-logic3, DRI-STEEM's state-of-the-art controller. Vapor-logic3 offers precise and complete humidifier control, and is so easy to use, it practically runs itself!

On-off, TP, or SSR control. Choose from standard modulation for superior control in most environments, or add the solid state relay (SSR) option to achieve even tighter control.

Many new control capabilities. Key features of this modular controller include:

- **PID control** provides accurate, responsive and adjustable RH control.
- **The temperature sensor** enables the controller to hold water at a preset temperature allowing rapid response to a call for humidity
- **Data reports** help you monitor humidifier performance
- **Backlit display** is easy to read
- **Menus are intuitive** and easy to navigate
- **Real-time clock** allows time-stamped alarm tracking and the ability to program draining for preset times
- **LonTalk® interoperability** allows communication with a LonTalk building automation system
- **Multiple-humidifier control** allows control of up to 16 humidifiers with one controller

Vaporstream features

Proven performance

- Control to ±1% RH
- Electronically monitored water level ensures safe and reliable operation
- Diagnostic test at unit start-up verifies system performance

Application flexibility

- Capacity range up to 285 lbs/hr (129 kg/h) for each unit
- Capacity up to 4560 lbs/hr (2068 kg/h) using multiple humidifier control option (link up to 16 humidifiers)
- Supports all types of water: tap, softened, reverse osmosis, or deionized; easy to field-convert if water type changes
- Disperses steam through ductwork or directly into a space
- Small footprint; fits in tight spaces
- Robust outdoor enclosure available for outdoor operation in any climate

Minimal maintenance

- Cleanout plate and removable cover provide access for inspection and servicing
- Use of softened water significantly reduces maintenance requirements
- End-of-season autodrain minimizes microbial growth
- User-adjustable water skimmer skims off floating minerals
- Controller-operated drain and flush removes precipitated minerals from evaporating chamber
- Constant thermal expansion and contraction of heating elements continuously sheds mineral buildup
- Three levels of heater protection prevent premature failure
- Easy water level control access

Advanced control with Vapor-logic3

- User-programmable for on-off, time-proportioning, or solid state relay (SSR) control
- Easy-to-use keypad displays current conditions, alarm log, graphed data, and message reminder for tank cleaning based on water usage
- Temperature sensor enables freeze protection and allows rapid warm-up
- Years of proven performance ensure trouble-free operation
- Cold-snap offset option prevents window condensation
- VAV control option
- Accepts all input signals
- Interoperable with any LonTalk network (not available with multiple-humidifier control)

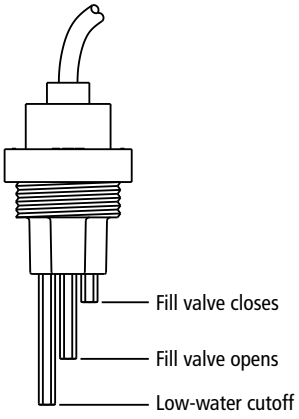
Optional features

- Weather cover for protected outdoor mounting
- Outdoor enclosure for climate-controlled outdoor mounting
- 316 stainless steel construction
- Evaporating chamber insulation
- NEMA-4 control cabinet

Guaranteed absorption

- Cataloged and guaranteed steam absorption distances
- Unique tubelets in dispersion tubes eliminate condensate drips
- Published absorption tables for sizing and selecting the correct dispersion option
- Dri-calc® software available for computer calculation of absorption distances and system selection

Figure 4-1:
Water level control for standard water systems

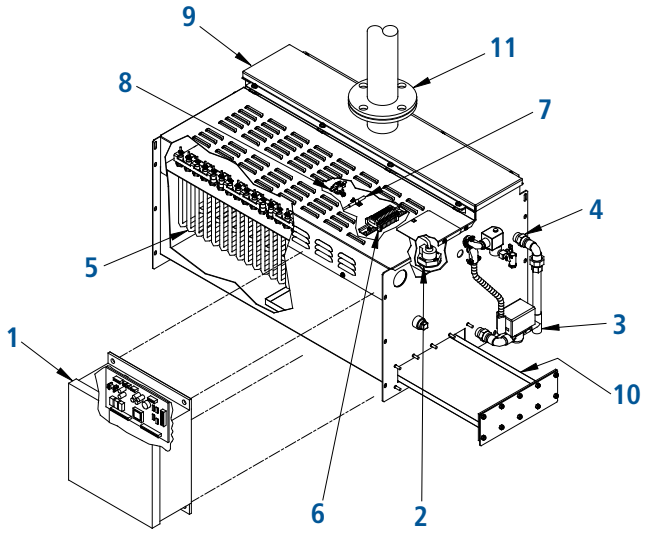


Systems using tap or softened water control water levels electronically using a three-rod probe. The controller responds with the above actions when the water level reaches each rod.

VLC-OM-030

Figure 4-2:
Vapor-logic3 keypad

Figure 4-3:
Vaporstream components



VLC-OM-001

1. Control components and cabinet

The Vapor-logic3 controller, housed within the control cabinet, controls all functions of the humidifier. The keypad (see Figure 4-2) provides intuitive menu-driven access to all system functions. See Page 7 for more information.

2. Water level control

Tap or softened water systems control water levels electronically using a three-rod probe (Figure 4-1). DI/RO water systems control water levels using a float valve (shown on next page) and low-water cutoff switch.

3. Drain

Duration and frequency of draining can be adjusted through the keypad. To avoid possible stagnant water and microbial growth, the humidifier automatically drains if there is no call for humidity after a user-defined time period (72 hour default).

4. Water skimmer/overflow port

In standard water systems, the water skimmer reduces surface minerals in the evaporating chamber. Skimming occurs each time the humidifier fills. The skim time duration is user-adjustable. DI/RO water systems do not require skimming. In DI/RO systems, the skimmer port functions as an overflow port.

5. Heating elements

Low-watt-density Incoloy-sheathed heating elements ensure operation for many seasons. Constant expansion and contraction of heating elements sheds mineral scale. In the unlikely event of heater failure, heating elements can be removed easily.

6. Terminal strip

This terminal strip allows all control wiring connections at the humidifier to be made in a single location.

7. Temperature sensor

Mounted on the evaporating chamber, this sensor enables:

- Over-temperature protection
- Freeze protection
- Preheating, allowing rapid response to a call for humidity

8. Over-temperature thermostat

This safety device will shut down the humidifier if it becomes too hot. This is one of three levels of safety protection that also includes the temperature sensor and the water level control system.

9. Service access

Access cover allows periodic inspection and servicing of the evaporating chamber.

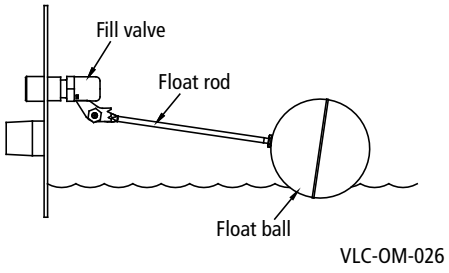
10. Cleanout tray

This removable tray collects settled minerals allowing easy maintenance (available on standard-water models with six, nine or twelve heaters).

11. Steam outlet

Steam generated from the unit rises and exits through the steam outlet and travels to the dispersion unit through either vapor hose or piping.

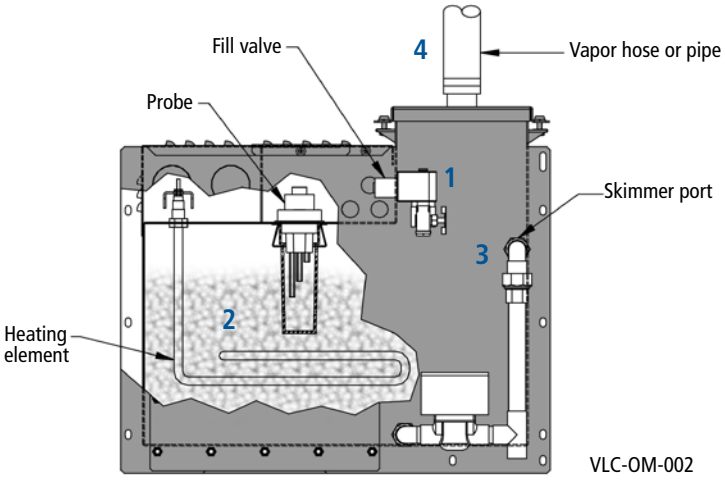
Figure 5-1:
Water level control for DI/RO water systems



Systems using deionized (DI) water or water that has been treated using reverse osmosis (RO) control water levels using a float valve and low water cutoff switch.

Figure 6-1:
Vaporstream principle of operation

Front view (standard water system)



1. When the system is first activated, the fill valve opens and the evaporating chamber fills with water to the operating level.
2. On a call for humidity, the heating elements are energized, causing the water to boil. The fill valve opens and closes as needed to maintain the operating water level.
3. During refill in standard water systems, a portion of the surface water is skimmed off, carrying away precipitated minerals. (DI/RO systems do not require skimming.)
4. Steam created in the evaporating chamber flows through vapor hose or piping to the dispersion assembly, where it is discharged into the airstream.

Accurate, responsive control with Vapor-logic3

Vapor-logic3 provides exceptional functionality, ease of use, and accurate RH control. Standard on all Vaporstream models, this controller features:

- **Real-time clock** allows time-stamped alarm tracking and three ways to program drain and flush cycles:
  1. Usage (unit drains after a set number of pounds of water have cycled through)
  2. Usage and time (unit drains at a preset time after a set number of pounds of water have cycled through)
  3. At a preset time
- **Keypad** has a backlit display and features:
  - Intuitive menu-driven access to all system functions
  - Default screen for quick viewing of system status and set points
  - Data reports to track performance and efficiency
  - System diagnostics and alarm tracking for troubleshooting
  - Password protection of setup parameters
  - Easy viewing in low-light environments
  - Three ways to mount the keypad:
    1. Hand-held; shipped with a 5' (1.5 m) cable
    2. Mounted on the control cabinet
    3. Mounted remotely using a standard telephone plate. The keypad can be located up to 500' (152 m; the maximum length of the keypad cable) from the Vaporstream.
- **Tank temperature sensor,** mounted on the evaporating chamber, allows Vapor-logic3 to provide:
  - Over-temperature protection
  - Freeze protection
  - Tank preheating, allowing rapid response to a call for humidity
- **PID control** provides accurate, responsive, and adjustable relative humidity (RH) control.
- **LonTalk interoperability** allows communication with a LonTalk building automation system using Standard Network Variable Types (SNVTs). Note that LonTalk interoperability with a building automation system is not available when using multiple humidifier control.
- **Multiple-humidifier control** allows control of up to 16 humidifiers with one controller. The primary benefit of multiple-humidifier control is expanded capacity without giving up consistent humidity control. The Vapor-logic3 controller anticipates increased demand and preheats tanks as needed to provide a rapid response to demand changes.

Figure 7-1:
Vapor-logic3 keypad

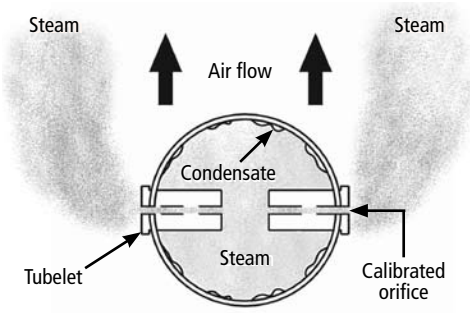
The Vapor-logic3 keypad is easy to use and read, and it provides access to all humidifier functions.

Drip-free dispersion basics

Figure 8-1:
DRI-STEEM dispersion tubes

DRI-STEEM's dispersion tubes are fitted with one or two rows of closely-spaced thermal-resin tubelets to evenly disperse steam across the airstream.

Figure 8-2:
DRI-STEEM tubelets



DRI-STEEM's unique tubelets extend into the center of the tube so only the driest steam is discharged into the air.

OM-150a

Guaranteed non-wetting distances

Using data collected in our on-site test lab, we have developed guaranteed steam absorption (non-wetting) distances. Performance charts allow you to confidently choose equipment that will accommodate any application.

Dry steam

Adding humidification to an airstream without creating wetness in the duct system is critical for the maintenance of a healthy environment. Wet areas in ducts are a threat to the health of building occupants since they moisten dust on duct floors, creating ideal breeding grounds for disease-producing microbes. In addition, water accumulating in ducts can drip and cause building damage.

Steam escapes drip-free through tubelets

All DRI-STEEM evaporative dispersion tube units discharge steam through thermal-resin tubelets fitted into dispersion tubes. These tubelets extend from the center of the tube, where the steam is driest, through the tube wall, to the duct airstream. In essence, the tubelets provide a temperature-neutral escape tunnel for steam, allowing steam to cross over lower-temperature metal without condensing or dripping. Each tubelet contains a calibrated orifice sized for steam capacity. These tubelets are a DRI-STEEM exclusive, and are essential for drip-free steam dispersion.

Condensate drains away

Some condensation is inevitable in steam dispersion, but through careful design, condensate can be controlled and directed away from where it can cause problems.

For example, the Ultra-sorb® dispersion panel has a unique double-header design that uses gravity to remove condensate. Steam enters the supply header, escapes through the tubelets, and condensate drains out the return header. In the Rapid-sorb® dispersion unit, steam enters one end of a single bottom header with velocities carefully managed so that condensate is not pushed out into the air along with the steam, but rather drains out at the opposite end of the header.

For more information about dispersion units, see Pages 9-10 and 24-31.

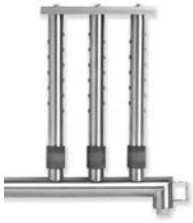
Vaporstream steam dispersion options

Ultra-sorb

The multiple-tube Ultra-sorb allows virtually instantaneous steam absorption. The factory-assembled panel can be installed within inches upstream of dampers, coils or elbows without dripping.

The Ultra-sorb's steam downflow design allows for high capacity dispersion. The unit is preassembled at the factory within a mounting frame, and installs easily. Simply mount the panel and complete the steam and condensate connections (see Pages 24-26).

Rapid-sorb



Rapid-sorb has a single header design with steam flowing up from a bottom header. This design is an excellent choice for medium capacity systems where multiple tubes are needed to handle the load and/or when non-wetting absorption distance is limited. Rapid-sorbs are assembled on-site (see Pages 24 and 27-28).

Reduce wasted energy by up to 85% with High-efficiency tubes

DRI-STEEM's PVDF insulated dispersion tubes reduce wasted energy by up to 85% while significantly reducing airstream heat gain and dispersion-generated condensate production. Insulating the dispersion tubes makes more steam available for dispersion, and less is lost to condensate. High-efficiency dispersion tubes are an available option for Ultra-sorb and Rapid-sorb dispersion assemblies. For more information, see the High-efficieny Tube option brochure, available at www.dristeem.com

Single or multiple tubes

Single or multiple dispersion tubes are an excellent choice for lower capacity applications or where there is room for a longer absorption distance (see Pages 24 and 29).

More dispersion options on the next page...

Figure 9-1:
Ultra-sorb dispersion

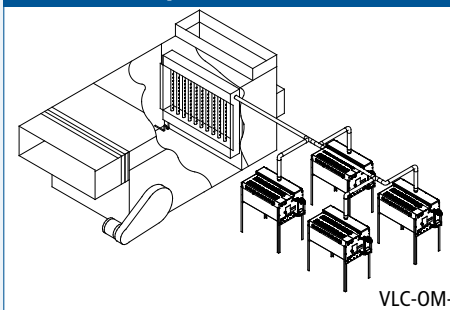


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Figure 9-2:
Rapid-sorb dispersion

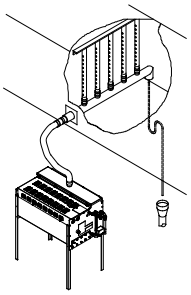

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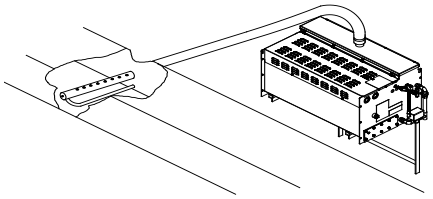
Figure 9-3:
Single or multiple tube dispersion



VLC-OM-15

Figure 9-4:
Ultra-sorb with high-efficiency tubes

Figure 10-1:
Space Distribution Unit (SDU) dispersion

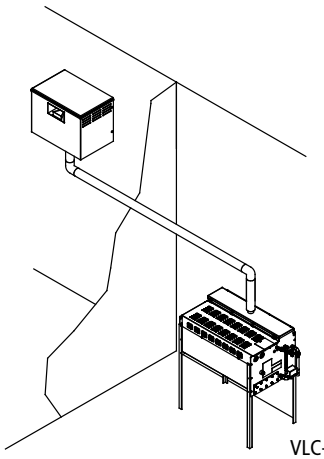
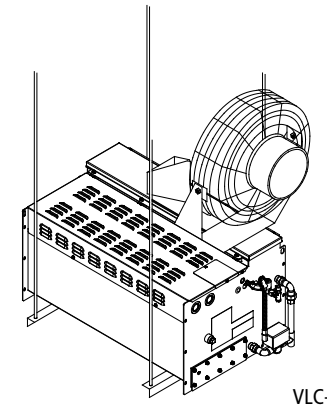


Figure 10-2:
Area-type dispersion



Space Distribution Units

Space Distribution Units (SDUs), designed for use in finished spaces, disperse steam into large open spaces and are particularly useful where there are no air-handling ducts.

There are two SDU models: SDU-I (steam absorbs within the enclosure with no visible vapor) and SDU-E (visible steam absorbs outside the enclosure).

The SDU-I fan mixes room air and steam to ensure complete absorption before discharge as humidified air. The SDU-I is an available option for VLC and VLDI models with maximum steam capacity of up to 30 lbs/hr (13.6 kg/h; see the specifications table on Page 11). **Note:** Maximum ambient RH must not exceed 45% for the SDU-I to operate properly.

The SDU-E is designed for higher capacity dispersion and is an available option on VLC and VLDI models with maximum steam capacity of up to 102 lbs/hr (46.3 kg/h; see the specifications table on Page 11). For more information about SDUs, see Page 30.

Area-type

The Area-type™ dispersion unit disperses steam in large open spaces and is commonly used where there are no air-handling ducts. The fan distributes steam quietly and efficiently without introducing water droplets into the air. Area-type is available for Vaporstream models 6-1 through 100-4. See Page 31 for more information.

Vaporstream electrical specifications

Table 11-1:
Vaporstream electrical specifications

VLC VLDI model (kW-stages)	Maximum steam capacity †		Heaters		Current draw (amps)									kW
					Single-phase					Three-phase***				
	lbs/hr	kg/h	Qty.	Stages**	120V	208V*	240V*	480V*	600V*	208V*	240V*	480V*	600V*	
2-1	5.7	2.6	1	1	16.7	9.6	8.3	4.2	3.3	—	—	—	—	2
3-1	8.6	3.9	1	1	25.0	14.4	12.5	6.3	5.0	—	—	—	—	3
4-1	11.4	5.2	1	1	33.3	19.2	16.7	8.3	6.7	—	—	—	—	4
5-1	15.2	6.9	1	1	—	25.6	22.2	11.1	8.9	—	—	—	—	5.33
6-1	17.1	7.8	3	1	—	28.8	25.0	12.5	10.0	16.7	14.4	7.2	5.8	6
9-1	25.7	11.6	3	1	—	43.3	37.5	18.8	15.0	25.0	21.7	10.8	8.7	9
12-1	34.2	15.5	3	1	—	—	—	25.0	20.0	33.3	28.9	14.4	11.5	12
16-1	45.6	20.7	3	1	—	—	—	33.3	26.7	44.4	38.5	19.2	15.4	16
21-1	59.9	27.1	3	1	—	—	—	43.8	35.0	—	—	25.3	20.2	21
25-1	71.3	32.3	3	1	—	—	—	—	41.7	—	—	30.1	24.1	25
12-2	34.2	15.5	6	2	—	57.7	50.0	25.0	20.0	33.3	28.9	14.4	11.5	12
18-2	51.3	23.3	6	2	—	86.5	75.0	37.5	30.0	50.0	43.3	21.7	17.3	18
24-2	68.4	31.0	6	2	—	—	—	50.0	40.0	66.6	57.7	28.9	23.1	24
32-2	91.2	41.4	6	2	—	—	—	66.7	53.3	88.8	77.0	38.5	30.8	32
42-2	119.7	54.3	6	2	—	—	—	87.5	70.0	—	—	50.5	40.4	42
50-2	142.5	64.6	6	2	—	—	—	—	83.3	—	—	60.1	48.1	50
18-3	51.3	23.3	9	3	—	86.5	75.0	37.5	30.0	50.0	43.3	21.7	17.3	18
27-3	77.0	34.9	9	3	—	129.8	112.5	56.3	45.0	74.9	65.0	32.5	26.0	27
36-3	102.6	46.5	9	3	—	—	—	75.0	60.0	99.9	86.6	43.3	34.6	36
48-3	136.8	62.0	9	3	—	—	—	100.0	80.0	133.2	115.5	57.7	46.2	48
63-3	179.6	81.4	9	3	—	—	—	131.3	105.0	—	—	75.8	60.6	63
75-3	213.8	96.9	9	3	—	—	—	—	125.0	—	—	90.2	72.2	75
24-4	68.4	31.0	12	4	—	115.4	100.0	50.0	40.0	66.6	57.7	28.9	23.1	24
36-4	102.6	46.5	12	4	—	173.1	150.0	75.0	60.0	99.9	86.6	43.3	34.6	36
48-4	136.8	62.0	12	4	—	—	—	100.0	80.0	133.2	115.5	57.7	46.2	48
64-4	182.4	82.7	12	4	—	—	—	133.3	106.7	177.6	154.0	77.0	61.6	64
84-4	239.4	108.6	12	4	—	—	—	175.0	140.0	—	—	101.0	80.8	84
100-4	285.0	129.3	12	4	—	—	—	—	166.7	—	—	120.3	96.2	100

Notes:

* If using an optional SDU or Area-type fan unit for dispersion, run a neutral line with 208V/240V/single-phase and 208V/three-phase power supply lines to provide a 120V circuit for the fan. With all other power supply voltages (other than 120V), provide a separate 120V circuit for the fan, or order from DRI-STEEM a transformer installed in the control cabinet.

** Heater stage identifies the number of contactors.

*** Three-phase power supply connection. All heater loads are wired Delta.

† Total humidifier load = load to meet design conditions + load to compensate for steam loss from the dispersion assembly and interconnecting piping. If total humidifier load is more than the humidifier's maximum capacity, design conditions will not be met. For steam loss data see the *DRI-STEEM Design Guide* available for downloading and printing at www.dristeem.com

Vaporstream weights and cabinet sizes

Table 12-1:
Vaporstream weights and control cabinet sizes by model

VLC VLDI model (kW-stages)	Shipping weight		Operating weight †		Control cabinet size* (M, L, XL, XXL)								
					Single-phase power					Three-phase power			
	lbs	kg	lbs	kg	120V	208V	240V	480V	600V	208V	240V	480V	600V
2-1	35	16	79	36	M	M	M	M	M	—	—	—	—
3-1	35	16	79	36	M	M	M	M	M	—	—	—	—
4-1	35	16	79	36	M	M	M	M	M	—	—	—	—
5-1	35	16	79	36	—	M	M	M	M	—	—	—	—
6-1	57	26	157	71	—	M	M	M	M	M	M	M	M
9-1	57	26	157	71	—	M	M	M	M	M	M	M	M
12-1	57	26	157	71	—	—	—	M	M	M	M	M	M
16-1	57	26	157	71	—	—	—	M	M	M	M	M	M
21-1	57	26	157	71	—	—	—	M	M	—	—	M	M
25-1	57	26	157	71	—	—	—	—	M	—	—	M	M
12-2	79	36	237	108	—	L	L	L	L	L	L	L	L
18-2	79	36	237	108	—	L	L	L	L	L	L	L	L
24-2	79	36	237	108	—	—	—	L	L	L	L	L	L
32-2	79	36	237	108	—	—	—	L	L	L	L	L	L
42-2	79	36	237	108	—	—	—	L	L	—	—	L	L
50-2	79	36	237	108	—	—	—	—	L	—	—	L	L
18-3	110	50	326	148	—	L	L	L	L	L	L	L	L
27-3	110	50	326	148	—	XL	L	L	L	L	L	L	L
36-3	110	50	326	148	—	—	—	L	L	L	L	L	L
48-3	110	50	326	148	—	—	—	L	XXL	XL	L	L	L
63-3	110	50	326	148	—	—	—	XL	XXL	—	—	L	L
75-3	110	50	326	148	—	—	—	—	XXL	—	—	L	XXL
24-4	153	70	427	194	—	L	L	L	L	L	L	L	L
36-4	153	70	427	194	—	XL	XL	L	L	L	L	L	L
48-4	153	70	427	194	—	—	—	L	L	XL	L	L	L
64-4	153	70	427	194	—	—	—	XL	XXL	XL	XL	L	L
84-4	153	70	427	194	—	—	—	XL	XXL	—	—	L	L
100-4	153	70	427	194	—	—	—	—	XXL	—	—	L	XXL

Notes:
* Control cabinet sizes in this table are for the largest required cabinet for each model. Depending on Vaporstream options chosen you may receive a smaller cabinet than the one shown in this table. Contact DRI-STEEM if you need more detailed information about control cabinet sizes. Control cabinet dimensions are shown on Page 14 of this catalog.
† Operating weight does not include weight of the control cabinet. See Page 14 for control cabinet weights.

Vaporstream dimensions

Figure 13-1:
Vaporstream dimensions

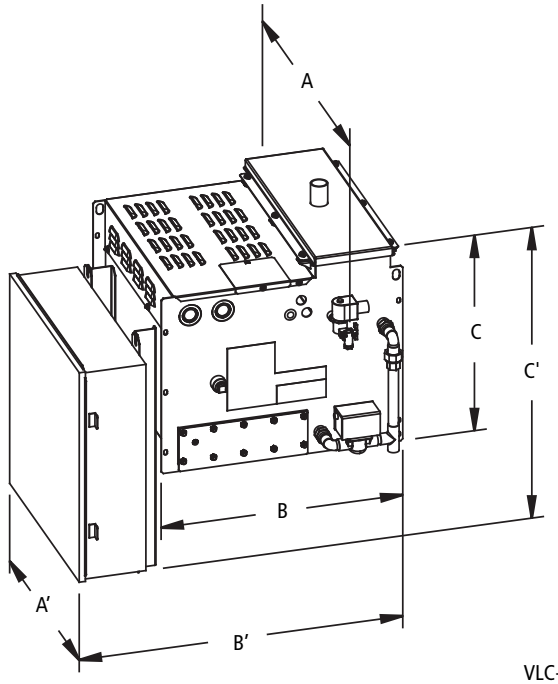


Table 13-1:
Vaporstream dimensions

VLC/VLDI model (kW - stages)	Without mounted control cabinet					
	A (length)		B (width)		C (height)	
	inches	mm	inches	mm	inches	mm
2-1, 3-1, 4-1, 5-1	12.52	318	26.00	660	18.88	480
6-1, 9-1, 12-1, 16-1, 21-1, 25-1	17.85	453	22.00	559	18.88	480
12-2, 18-2, 24-2, 32-2, 42-2, 50-2	25.35	644	22.00	559	18.88	480
18-3, 27-3, 36-3, 48-3, 63-3, 75-3	32.85	834	22.00	559	18.88	480
24-4, 36-4, 48-4, 64-4, 84-4, 100-4	40.35	1025	22.00	559	18.88	480

VLC/VLDI model (kW - stages)	With mounted control cabinet option						
	Max. control cabinet size	A' (length 2)		B' (width 2)		C' (height 2)	
		inches	mm	inches	mm	inches	mm
2-1, 3-1, 4-1, 5-1	M	14.75	375	34.00	864	30.31	770
6-1, 9-1, 12-1, 16-1, 21-1, 25-1	M	25.00	635	30.00	762	30.31	770
12-2, 18-2, 24-2, 32-2, 42-2, 50-2	L	29.00	737	30.00	762	34.11	866
18-3, 27-3, 36-3, 48-3, 63-3, 75-3	XXL	32.85	834	32.00	813	46.11	1171
24-4, 36-4, 48-4, 64-4, 84-4, 100-4	XXL	40.35	1025	32.00	813	46.11	1171

Notes:
- For all Vaporstream models with optional insulation, add 1" (25 mm) to dimensions A, C, and C'.
- Dimensions are largest possible for these models. Actual dimensions may be smaller.

Figure 14-1:
Vaporstream model 6-1 with mounted control cabinet

Control cabinet features

The standard Vaporstream control cabinet is an ETL- and C-ETL-listed NEMA-12 cabinet and is shipped loose. Control cabinet options include:

- Factory mounting on humidifier
- NEMA-4 cabinet
- Cabinet door interlock switch
- Cabinet door lock

The control cabinet's size is based on capacity and system options. See Table 14-1 below and Table 12-1 on Page 12 for cabinet sizing by model.

The control cabinet can be mounted up to 50' (15 m) from the Vaporstream. The keypad can be mounted up to 500' (152 m) from the control cabinet. (Distances are based on wire/cable lengths.)

Figure 14-2:
Typical control cabinet layout

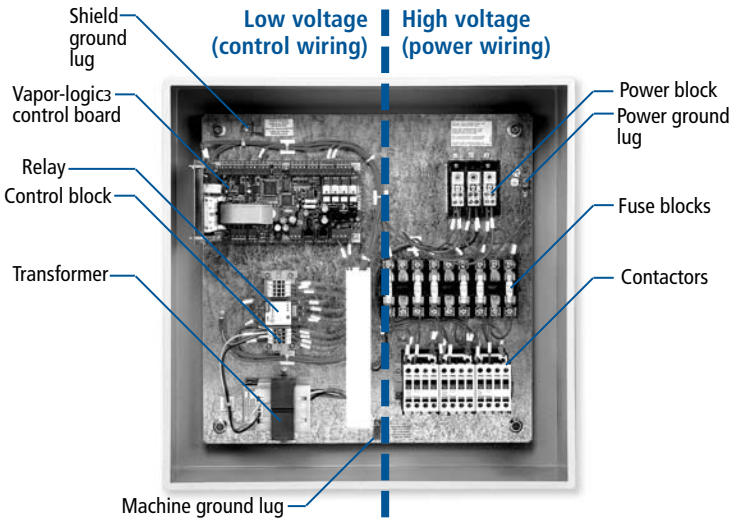


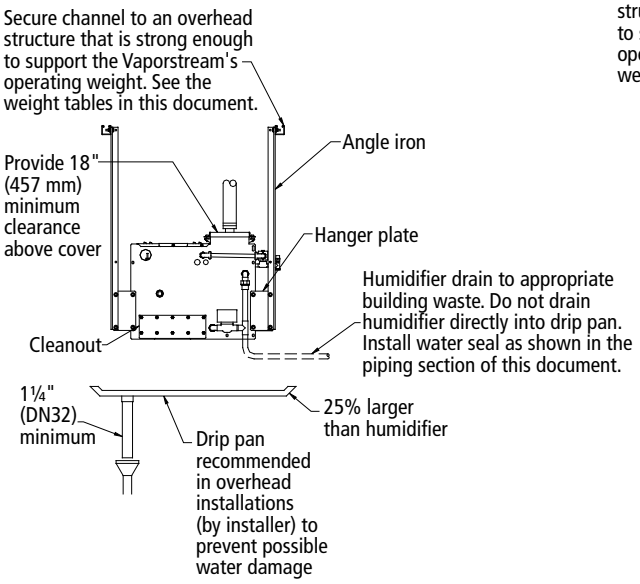
Table 14-1:
Standard control cabinet dimensions and weights

Cabinet size	Cabinet dimensions		Shipping weight*	
	inches	mm	lbs	kg
S	16 h x 14 w x 6 d	406 h x 356 w x 152 d	32	15
M	20 h x 20 w x 7 d	508 h x 508 w x 178 d	55	25
L	24 h x 24 d x 7 d	610 h x 610 w x 178 d	73	33
XL	30 h x 24 w x 9 d	762 h x 610 w x 229 d	91	41
XXL	36 h x 30 w x 9 d	914 h x 762 w x 229 d	136	62

Notes:
* In addition to shipping weight of humidifier

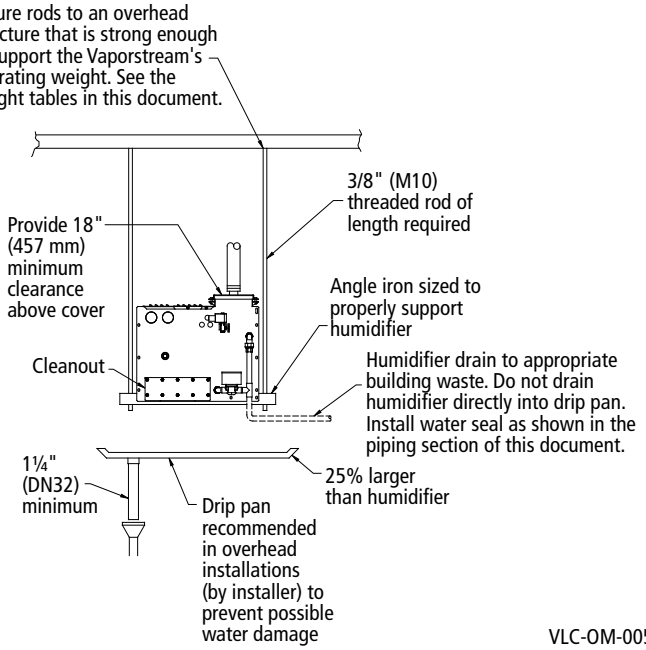
Figure 15-1: Trapeze hanger

Vaporstream Models 2-1 through 5-1


Secure channel to an overhead structure that is strong enough to support the Vaporstream's operating weight. See the weight tables in this document.
Provide 18" (457 mm) minimum clearance above cover
Angle iron
Hanger plate
Humidifier drain to appropriate building waste. Do not drain humidifier directly into drip pan. Install water seal as shown in the piping section of this document.
Cleanout
1¼" (DN32) minimum
25% larger than humidifier
Drip pan recommended in overhead installations (by installer) to prevent possible water damage

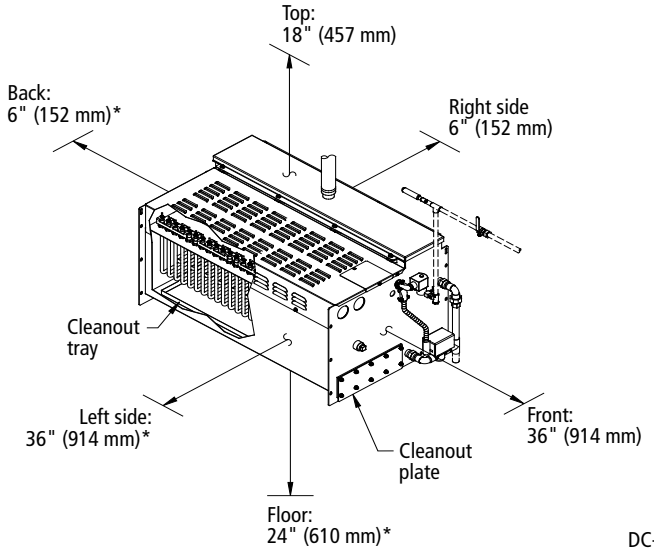
VLC-OM-038

Vaporstream Models 6-1 through 100-4


Secure rods to an overhead structure that is strong enough to support the Vaporstream's operating weight. See the weight tables in this document.
3/8" (M10) threaded rod of length required
Provide 18" (457 mm) minimum clearance above cover
Angle iron sized to properly support humidifier
Cleanout
Humidifier drain to appropriate building waste. Do not drain humidifier directly into drip pan. Install water seal as shown in the piping section of this document.
1¼" (DN32) minimum
25% larger than humidifier
Drip pan recommended in overhead installations (by installer) to prevent possible water damage

VLC-OM-005

Figure 15-2: Vaporstream clearance recommendations



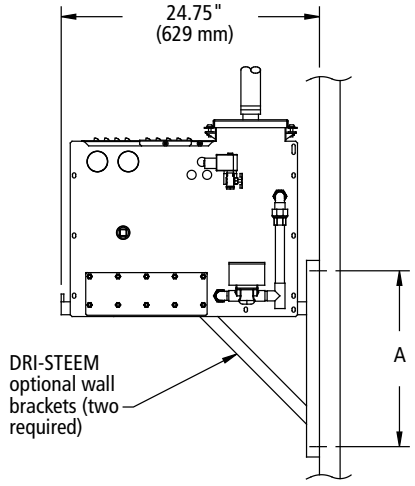
DC-1181

Note:
* When the control cabinet is mounted on the Vaporstream, provide 36" (914 mm) clearance from the front of the control cabinet and 6" (152 mm) from the bottom of the cabinet to the floor.

Table 15-1: Mounting options by model

Mounting method	VLC/VLDI models			
	2-1, 3-1, 4-1, 5-1		All other models	
	Standard	Optional	Standard	Optional
Trapeze	X		X	
Support legs				X
Wall brackets				X
Weather cover		X		X
Outdoor enclosure		X		X

Figure 16-1:
Wall brackets



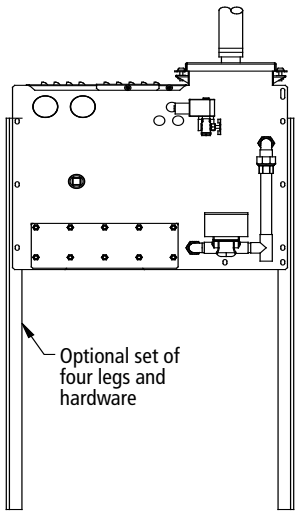
VLC-OM-007

Table 16-1:
Wall brackets Dimension A (center to center of mounting holes)

Vaporstream model	inches	mm
Three-heater models: 6-1, 9-1, 12-1, 16-1, 21-1, 25-1	17	432
Six-heater models: 12-2, 18-2, 24-2, 32-2, 42-2, 50-2	17	432
Nine-heater models*: 18-3, 27-3, 36-3, 48-3, 63-3, 75-3	28	711
Twelve-heater models*: 24-4, 36-4, 48-4,64-4, 84-4, 100-4	34	864

Notes:
* Wall bracket installation on metal stud walls is not recommended for nine-heater and twelve-heater models
• Wall brackets are not available for models 2-1, 3-1, 4-1, or 5-1.

Figure 16-2:
Support legs



VLC-OM-006

Vaporstream weather cover

Figure 17-1:
Weather cover exploded view

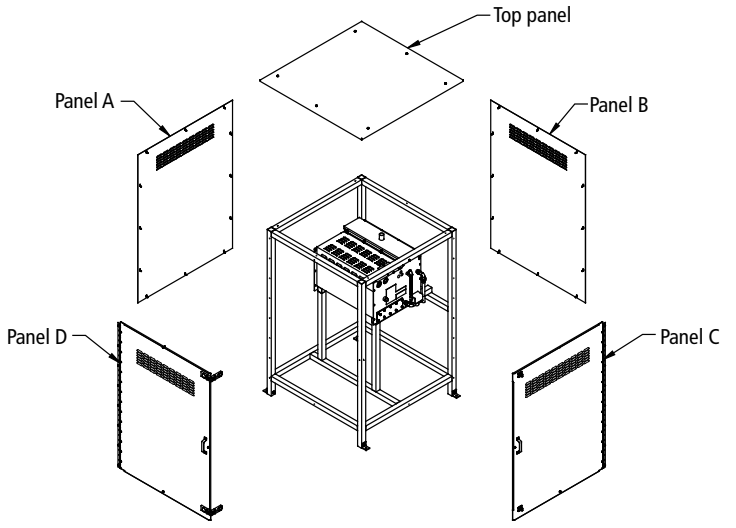


Figure 17-2:
Weather cover dimensions

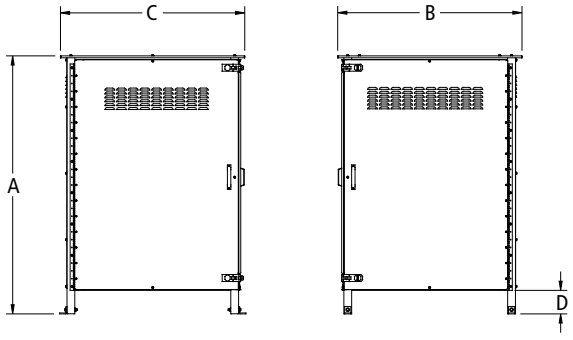


Table 17-1:
Weather cover dimensions

Letter	Description	1-heater and 3-heater covers		6-heater cover		9-heater cover		12-heater cover	
		inches	mm	inches	mm	inches	mm	inches	mm
A	Height	66	1676	66	1676	66	1676	66	1676
B	Length	44	1118	44	1118	44	1118	44	1118
C	Width	35	889	39	991	44	1118	50	1270
D	Distance from bottom	6	152	6	152	6	152	6	152

Optional Vaporstream weather cover

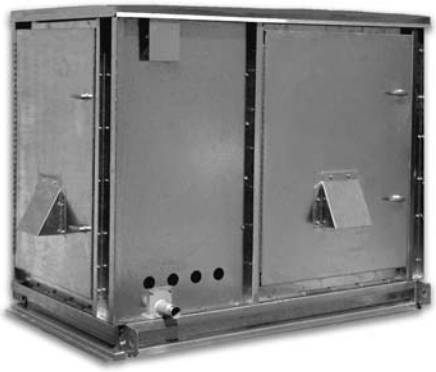
The optional weather cover is water-resistant and designed to protect a Vaporstream unit from rain and sun. The Vaporstream weather cover has been tested and approved by ETL Testing Laboratories, Inc., and is listed to UL Standard 1995 and certified to CAN/CSA Standard C22.2 No. 236.

Table 17-2:
Weather cover weights

Weather cover size	lbs	kg
1-heater	390	172.4
3-heater	395	172.4
6-heater	430	181.4
9-heater	465	190.5
12-heater	500	199.6

Vaporstream outdoor enclosure overview

Figure 18-1:
Outdoor enclosure



Now you can install a Vaporstream humidifier virtually anywhere with our enclosure for outdoor humidifier mounting. This pre-packaged, factory-installed unit ships complete to the job site, ready for easy-to-connect water and electrical connections.

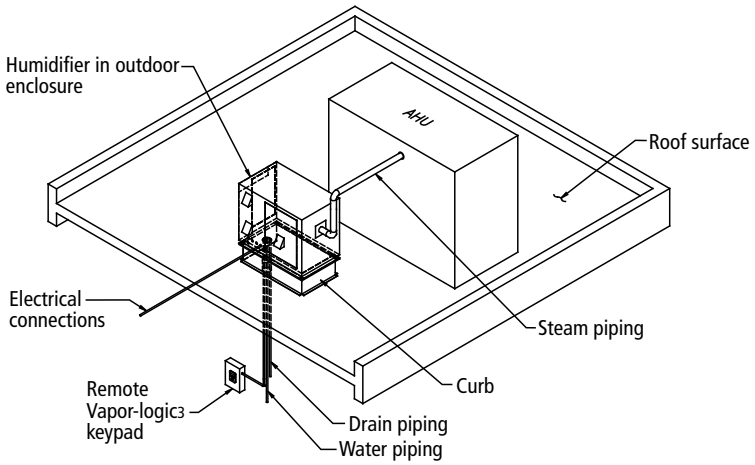
Outdoor enclosure expands application flexibility

Outdoor humidifier operation in any climate is now possible with the DRI-STEEM outdoor enclosure. This prepackaged, factory-assembled unit ships complete to the job site, ready for easy-to-connect water, electrical or steam field connections to the preinstalled humidifier inside. With a variety of available mounting options — curb, legs, or flush — installation is a snap.

Outdoor enclosure features

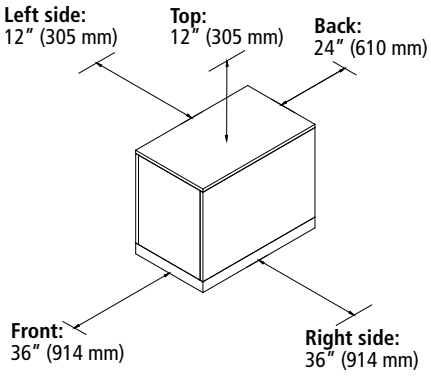
- **Install on the ground or on the roof.** Outdoor enclosures are ideal for facilities that have limited interior space.
- **Factory constructed and assembled.** The outdoor enclosure is shipped complete with your humidifier preinstalled and tested. Humidifiers are prepiped within the enclosure with an integral water seal and are ready for quick connection to water, steam and electricity.
- **Certified, tested and proven.** In-house testing and numerous successful installations have proven that the outdoor enclosure provides reliable operation under extreme conditions.
- **Easy access for service.** Steel enclosure doors provide full access to all internal components. The doors feature stainless steel hinges and latches operable from both the exterior and interior of the unit.
- **Protects in cold and hot climates.** To ensure complete safety and operation in all climates, the outdoor enclosure has supplemental heating and ventilating systems that automatically maintain required operation conditions. DRI-STEEM humidifiers housed in outdoor enclosures operate properly when outdoor temperatures range from −40 °F to 122 °F (−40 °C to 50 °C).
- **Robust design.** The outdoor enclosure is ruggedly built to completely protect internal components. The enclosure is constructed of heavy-duty galvanized steel and is fully insulated. Gaskets on doors ensure a tight seal.

Figure 19-1:
Typical rooftop installation overview



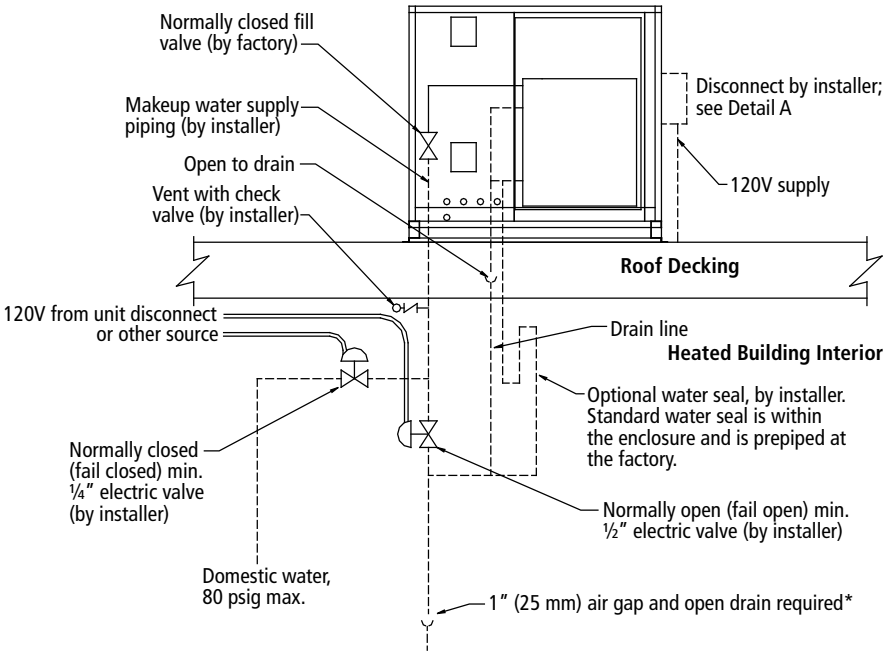
OM-7464

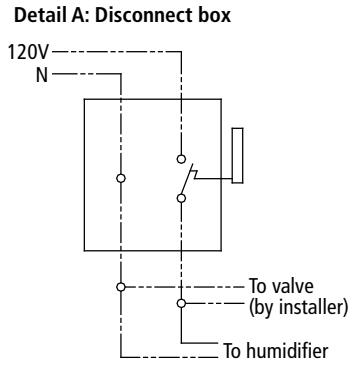
Figure 19-2:
Outdoor enclosure clearances



OM-955

Figure 19-3:
Optional installation method for water supply piping

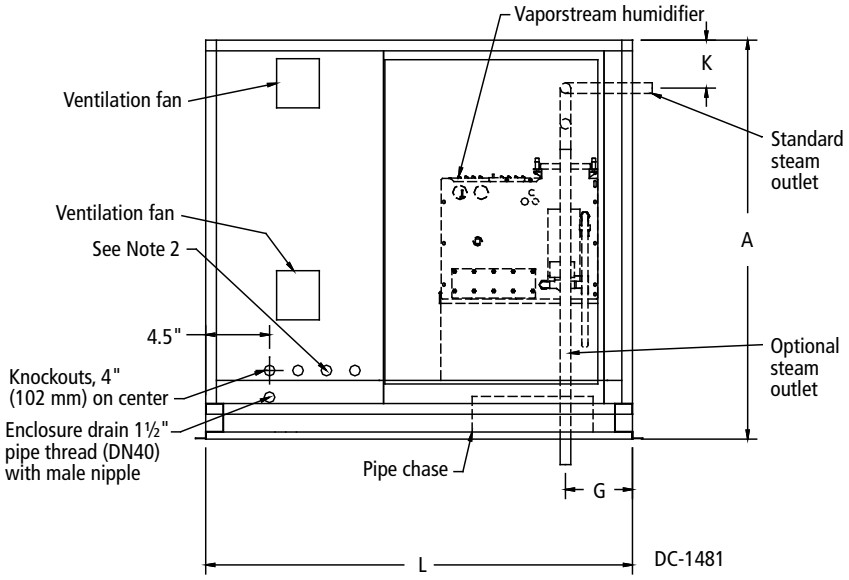

Normally closed fill valve (by factory)
Makeup water supply piping (by installer)
Open to drain
Vent with check valve (by installer)
Disconnect by installer; see Detail A
120V supply
Roof Decking
120V from unit disconnect or other source
Drain line
Heated Building Interior
Optional water seal, by installer. Standard water seal is within the enclosure and is prepiped at the factory.
Normally closed (fail closed) min. ¼″ electric valve (by installer)
Normally open (fail open) min. ½″ electric valve (by installer)
Domestic water, 80 psig max.
1″ (25 mm) air gap and open drain required*



Note:
* Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensate may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.

OM-954

Figure 20-1:
Vaporstream outdoor enclosure with standard or optional steam outlet, elevation view



Notes:

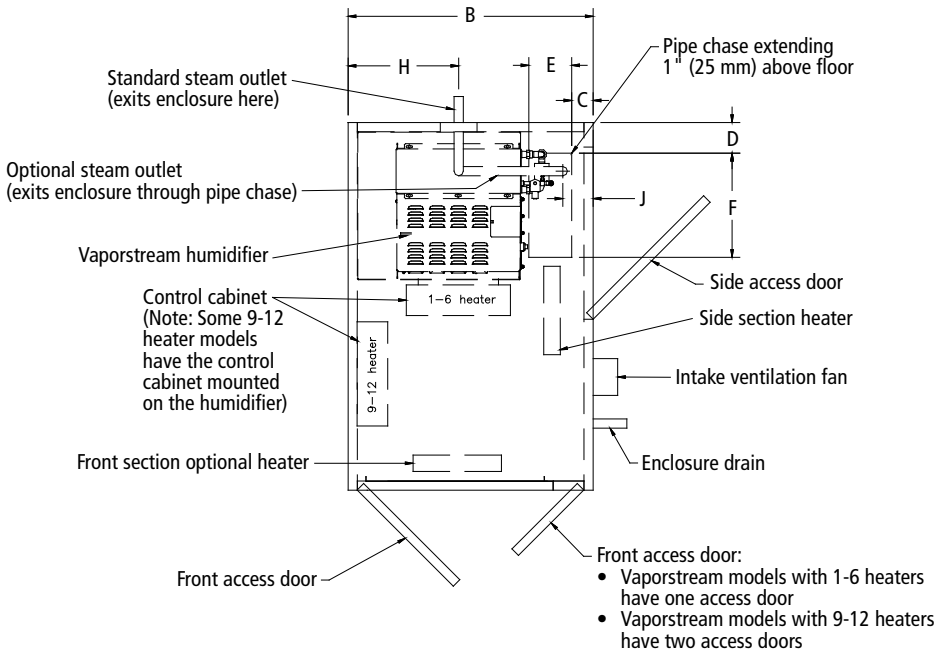
1. The outdoor enclosure has two available steam distribution configurations. The standard configuration has a steam outlet at the back of the outdoor enclosure for connecting to steam dispersion unit piping. The optional internal steam distribution configuration routes steam within the outdoor enclosure and down through the enclosure pipe chase into a building.
2. There are four knockouts located on the right and left side of the enclosure. Knockout sizes are 1½" (hole dia. 50 mm) for Vaporstream models with 1-6 heaters and 2" (hole dia. 63.5 mm) for Vaporstream models with 9-12 heaters. Run the electrical power into the enclosure at these knockouts.
3. All piping from the Vaporstream unit to the steam outlet is stainless steel pipe. Depending on the application, interconnecting piping from the steam outlet to the dispersion assembly can be tubing, pipe or DRI-STEEM vapor hose.
4. A separate 15 amp, 120 VAC service must be brought to the outdoor enclosure to power the enclosure heaters and fans.

Table 20-1:
Vaporstream outdoor enclosure dimensions*

Item	Description	Vaporstream models			
		with 1-6 heaters		with 9-12 heaters	
		inches	mm	inches	mm
A	Enclosure height	56.00	1422	56.00	1422
B	Enclosure width	40.00	1016	54.00	1372
C	Pipe chase position	2.50	67	2.50	67
D		2.50	64	2.50	64
E	Pipe chase size	8.00	203	8.00	203
F		19.50	495	19.50	495
G	Steam pipe position	13.50	343	13.50	343
H		22.00	559	29.50	899
J		7.00	178	7.00	178
K		8.25	210	9.25	235
L	Length	60.00	1524	64.00	1626

Note:
* See drawings above and on the next page.

Figure 21-1:
Vaporstream outdoor enclosure, top view



DC-1482

Table 21-1:
Vaporstream outdoor enclosure connection sizes

Description	All Vaporstream models
Water makeup (fill)	¼" pipe thread (DN8)
Drain	¾" (DN20)
Condensate return	¾" pipe thread (DN20)

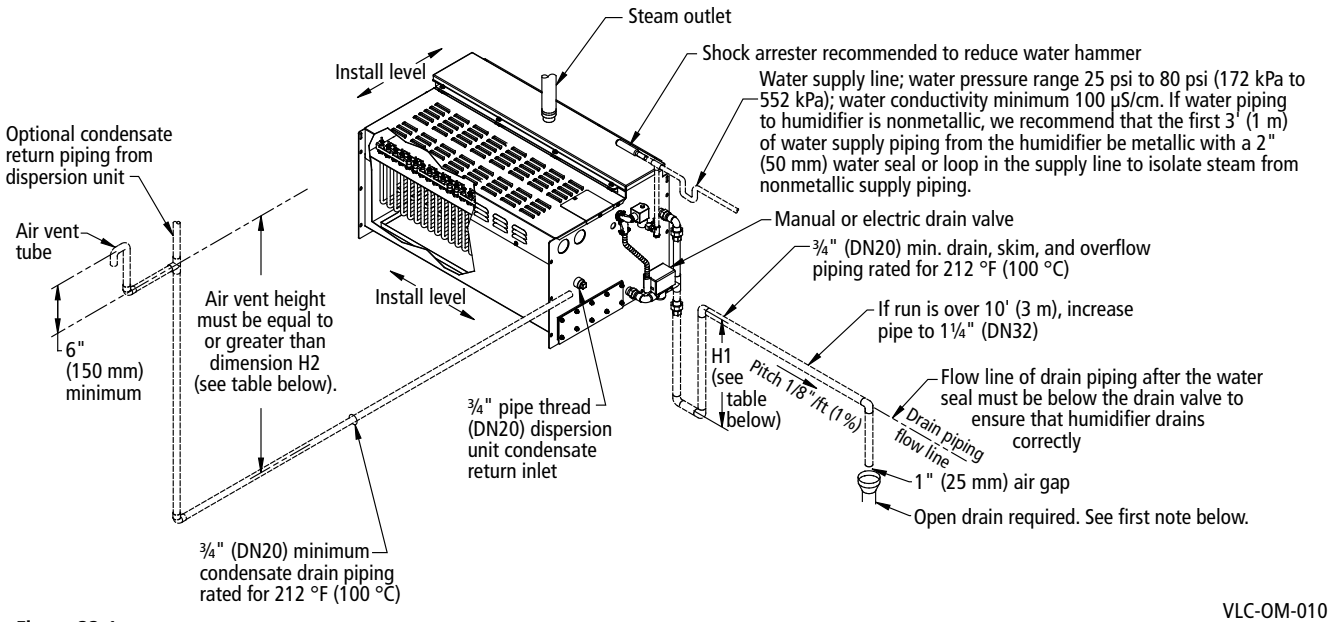
Notes:
- See Table 11-1 for capacities and input requirements.
- Add 15 full load amps (120 VAC) when using an outdoor enclosure with a heater package.
- Add 2 full load amps (120 VAC) when using an outdoor enclosure without a heater package.

Table 21-2:
Vaporstream outdoor enclosure weights

Vaporstream model	Number of heaters	Outdoor enclosure shipping weight*		Outdoor enclosure operating weight*	
		lbs	kg	lbs	kg
2-1, 3-1, 4-1, 5-1	1	485	220	530	240
6-1, 9-1, 12-1, 16-1, 21-1, 25-1	3	515	234	620	281
12-2, 18-2, 24-2, 32-2, 42-2, 50-2	6	535	243	690	313
18-3, 27-3, 36-3, 48-3, 63-3, 75-3	9	860	390	1090	494
24-4, 36-4, 48-4, 64-4, 84-4, 100-4	12	910	413	1190	540

Note:
* Includes humidifier

Figure 22-1:
Field piping overview for Vaporstream Model VLC (standard water models)

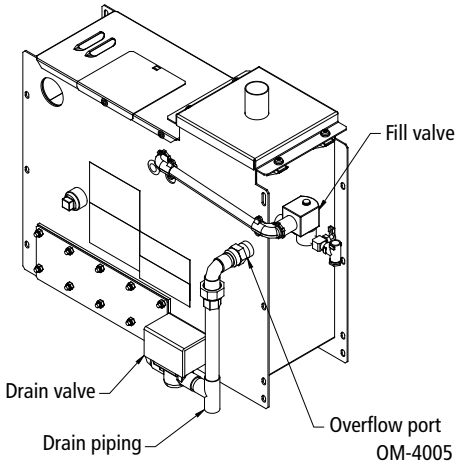

Steam outlet
Shock arrester recommended to reduce water hammer
Install level
Water supply line; water pressure range 25 psi to 80 psi (172 kPa to 552 kPa); water conductivity minimum 100 µS/cm. If water piping to humidifier is nonmetallic, we recommend that the first 3' (1 m) of water supply piping from the humidifier be metallic with a 2" (50 mm) water seal or loop in the supply line to isolate steam from nonmetallic supply piping.
Optional condensate return piping from dispersion unit
Manual or electric drain valve
Air vent tube
¾" (DN20) min. drain, skim, and overflow piping rated for 212 °F (100 °C)
Air vent height must be equal to or greater than dimension H2 (see table below).
Install level
If run is over 10' (3 m), increase pipe to 1¼" (DN32)
6" (150 mm) minimum
H1 (see table below)
Pitch 1/8" /ft (1%)
Flow line of drain piping after the water seal must be below the drain valve to ensure that humidifier drains correctly
Drain piping flow line
¾" pipe thread (DN20) dispersion unit condensate return inlet
1" (25 mm) air gap
Open drain required. See first note below.
¾" (DN20) minimum condensate drain piping rated for 212 °F (100 °C)

VLC-OM-010

Figure 22-1 notes:

- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Offset humidifier from floor drain to prevent flash steam from rising into the humidifier.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 1" (25 mm) above the skim/overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Damage caused by chloride corrosion is not covered by your DRI-STEEM warranty.
- See the next page for recommended water supply piping for Model VLDI (DI/RO water model).

Figure 22-2:
VLC Models 2-1 through 5-1 piping

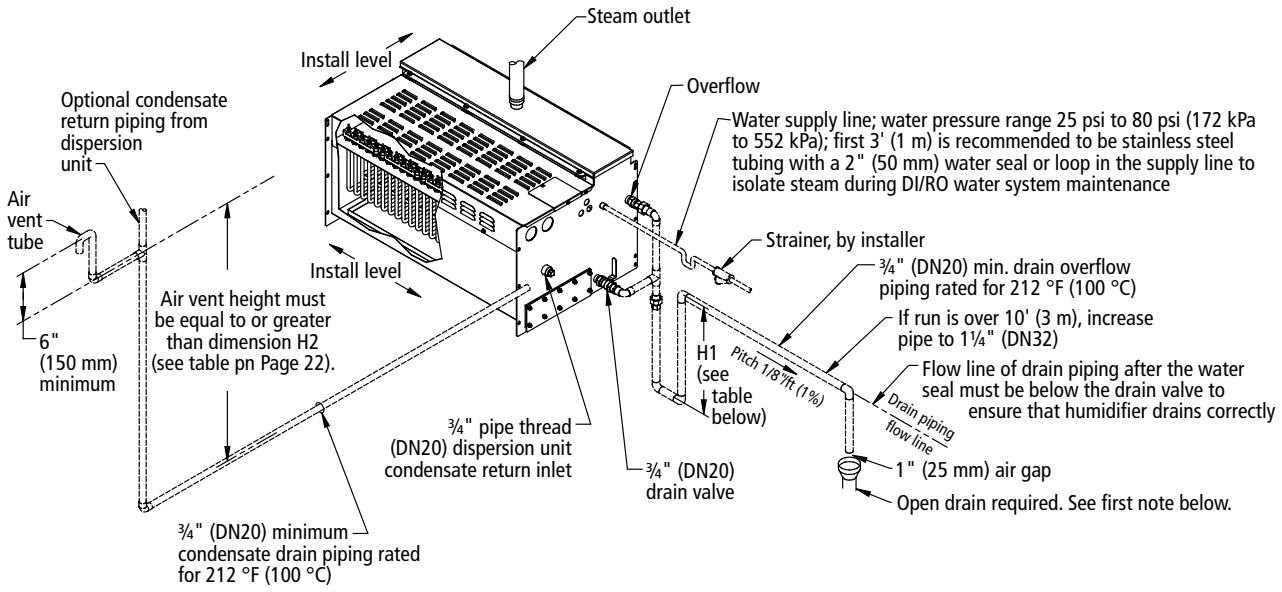


OM-4005

Table 22-1:
Heights required to overcome Vaporstream internal pressure (H1, H2)

Unit output			Water seal height (H1)		Air vent height (H2)	
kW	lbs/hr	kg/h	inches	mm	inches	mm
≤ 48	≤ 138	≤ 62	12	305	22.5	572
49-64	139–183	63–83	15	381	27.5	699
> 64	> 183	> 83	18	457	30.5	775

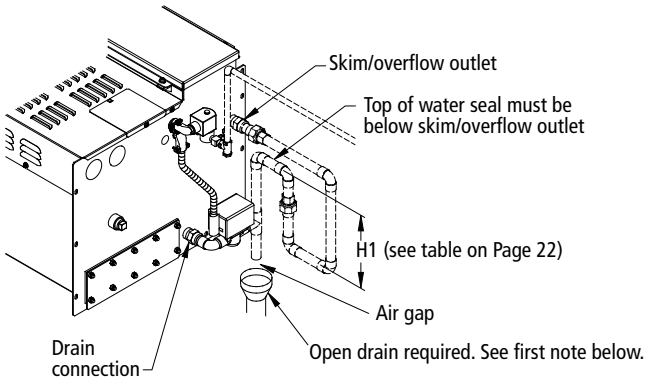
Figure 23-1:
Field piping overview Vaporstream Model VLDI (DI/RO water models)


Steam outlet
Install level
Overflow
Optional condensate return piping from dispersion unit
Water supply line; water pressure range 25 psi to 80 psi (172 kPa to 552 kPa); first 3' (1 m) is recommended to be stainless steel tubing with a 2" (50 mm) water seal or loop in the supply line to isolate steam during DI/RO water system maintenance
Air vent tube
Strainer, by installer
¾" (DN20) min. drain overflow piping rated for 212 °F (100 °C)
Install level
Air vent height must be equal to or greater than dimension H2 (see table pn Page 22).
If run is over 10' (3 m), increase pipe to 1¼" (DN32)
6" (150 mm) minimum
H1 (see table below)
Pitch 1/8"/ft (1%)
Flow line of drain piping after the water seal must be below the drain valve to ensure that humidifier drains correctly
Drain piping flow line
¾" pipe thread (DN20) dispersion unit condensate return inlet
¾" (DN20) drain valve
1" (25 mm) air gap
Open drain required. See first note below.
¾" (DN20) minimum condensate drain piping rated for 212 °F (100 °C)

VLC-OM-011

Figure 23-1 notes:
- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Offset humidifier from floor drain to prevent flash steam from rising into the humidifier.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 1" (25 mm) above the overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Damage caused by chloride corrosion is not covered by your DRI-STEEM warranty.
- See the previous page for recommended water supply piping for Model VLC (standard water system).

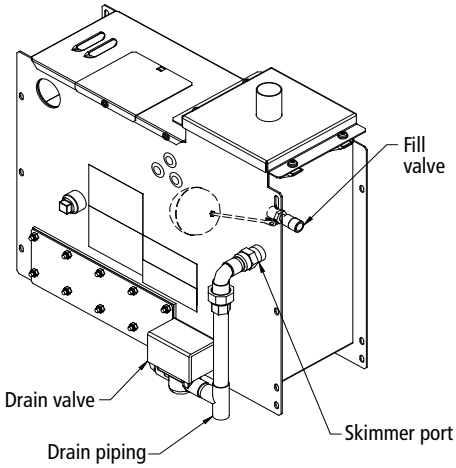
Figure 23-2:
Alternate water seal and drain valve piping


Skim/overflow outlet
Top of water seal must be below skim/overflow outlet
H1 (see table on Page 22)
Air gap
Drain connection
Open drain required. See first note below.

VLC-OM-012

Notes:
- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Use this piping configuration when water seal must be elevated above flow line of drain connection, such as when the humidifier is mounted near the floor.
- Dashed lines indicate provided by installer

Figure 23-3:
VLDI Models 2-1 through 5-1 piping



OM-4004

Calculating non-wetting distances

Notes:

- Final equipment selection should account for condensate loss. See the *DRI-STEEM Design Guide* for steam loss tables.
- Dispersion assembly should accommodate maximum output capacity of humidifier.

Sample exercise

To learn more about how to specify a dispersion unit based on absorption non-wetting distance, read the sample problem below. For purposes of this sample problem, assume you have chosen to use Ultra-sorb units because you want pre-assembled panels.

Assume the entering air is 20% RH, and the leaving air needs to be 70% RH. Design for a non-wetting distance of 24" (610 mm) maximum.

Solution

Refer to the graph on Page 25: Ultra-sorb non-wetting distances. Find 20% entering RH. Proceed vertically until you intersect the 70% leaving RH line. Draw a line horizontally from that point to the right to see that for 24" (610 mm) of non-wetting distance, 6" (152 mm) tube spacing would be the closest match.

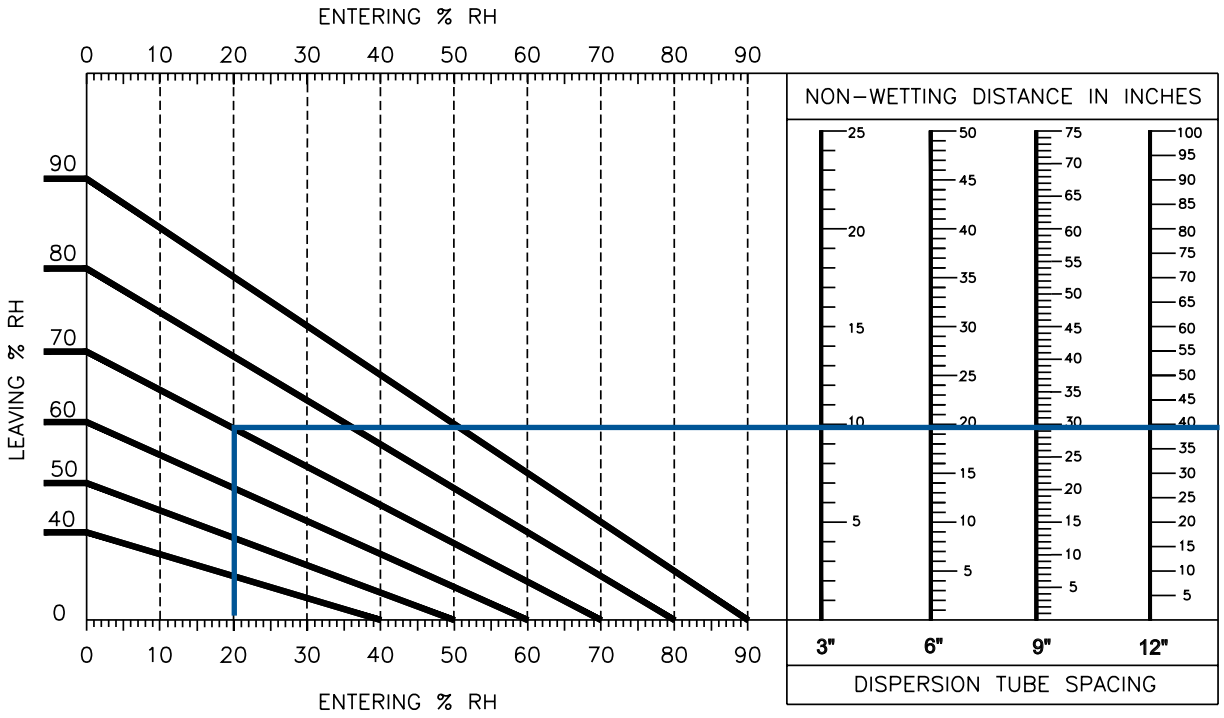
Verify capacity

From Table 25-1: Ultra-sorb tube spacing and capacity on Page 25, note that for 6" (152 mm) spacing, maximum capacity is 18 lbs/hr/ft^2 (88 kg/h/m^2). Multiply this value by the active face area of the Ultra-sorb to determine if the unit will produce adequate output capacity. If the capacity is inadequate, go to the next smaller tube spacing.

Steam absorption considerations

1. Non-wetting distance is the dimension downstream from the leaving side of the steam dispersion assembly to the point where wetting will not occur, although wisps of steam may be present. Solid objects at duct air temperature, such as coils, dampers, fans, etc., downstream of this dimension will remain dry.
2. **CAUTION!** Non-wetting distances described in this catalog do not apply when installing a steam dispersion assembly upstream of filter media. If you need to install a steam dispersion assembly upstream of filter media, consult your representative or DRI-STEEM directly for special recommendations.
3. Note that the rise (Δ) in RH (the difference between entering and leaving RH) has a direct bearing on the non-wetting distance. As the rise increases, more vapor needs to be dispersed into the air, and thus the non-wetting distance increases.
4. Uneven airflow over the cross-section of a dispersion assembly can result in nonuniform mixing of steam with air which, in turn, will adversely affect the non-wetting distance.

Figure 25-1:
Ultra-sorb non-wetting distances



Note:
The above data applies to all air velocities up to 1,500 fpm (7.6 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH. The blue lines in the graph refer to the sample exercise described on Page 24.

Table 25-1:
Ultra-sorb tube spacing and capacity

Tube spacing		Maximum capacity	
inches	mm	lbs/hr/ft²	kg/h/m²
3	76	36	175
6	152	18	88
9	229	12	59
12	305	9	44

Note:
The above steam flow capacity data is based on pounds (kg) of steam per hour per square foot (meter) of face area, exclusive of headers, at various tube spacings.

Figure 26-1:
Ultra-sorb Model LV dimensions

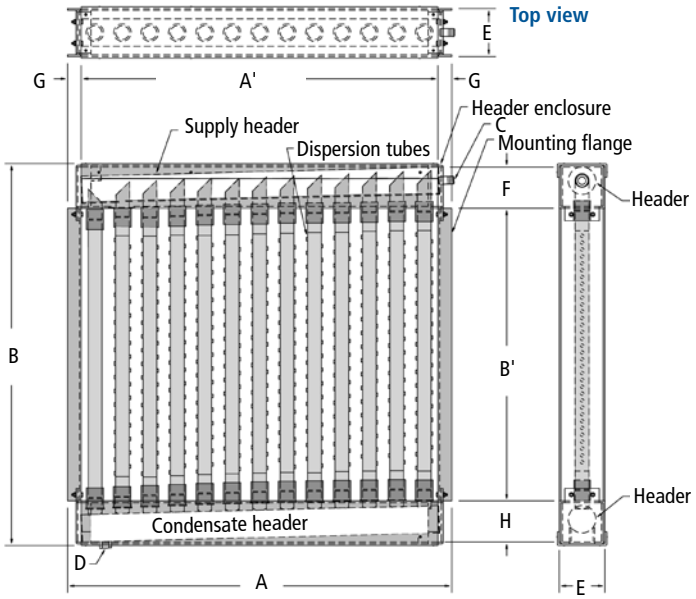


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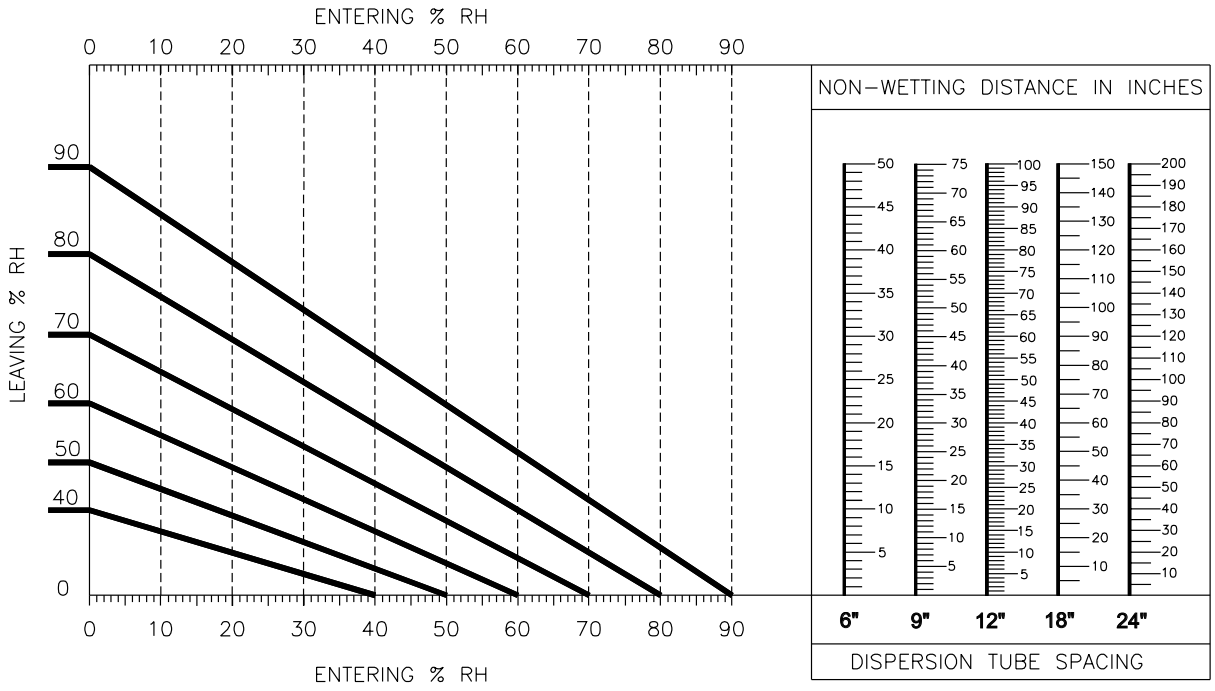
Table 26-1:
Ultra-sorb Model LV dimensions

Dimension	Description	Inches (mm)
A	Overall width	15" (381) minimum to 147" (3734) maximum in 1" (25) increments
A'	Face width	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
B	Overall height	21" (533) minimum to 156" (3962) maximum in 1" (25) increments
B'	Face height	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
C	Steam inlet diameter	Determined by maximum capacity
D	Condensate drain	¾" pipe thread (DN20)
E	Header enclosure (front to back)	For 3" (76) and 4" (102) headers, E=5" (127); for 5" (127) header, E=6" (152); for 6" (152) header, E=7" (178)
F	Header enclosure (top to bottom)	For 3" (76) header F=4.5" (114); for 4" (102) header, F=5.5" (140); for 5" (127) header, F=6.5" (165); for 6" (152) header F = 7.5" (191)
G	Flange	1.5" (38)
H	Condensate header enclosure	4.5" (114)

Notes:
- Header diameter varies with capacity.
- Dimensions and specifications subject to change without notice.

Figure 27-1:
Rapid-sorb non-wetting distances



Note:
The above data applies to all air velocities up to 1,500 fpm (7.6 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH.

Table 27-1:
Rapid-sorb header capacities

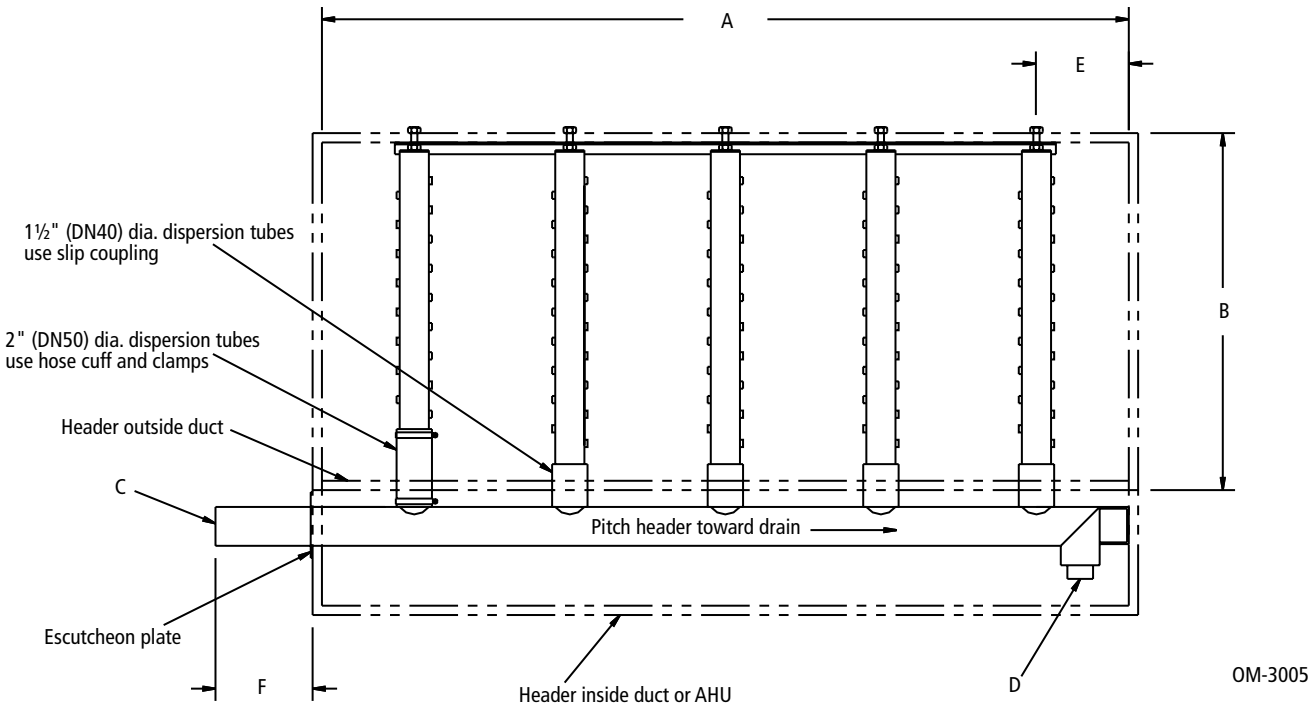
Header capacity		Header diameter	
lbs/hr	kg/h	inches	DN
≤250	≤113	2	50
251-500	114-227	3	80
501-800	228-363	4	100

Table 27-2:
Rapid-sorb dispersion tube capacities*

Tube capacity		Tube diameter	
lbs/hr	kg/h	inches	DN
≤35	≤16	1½	40
36-70	17-32	2	50

Note:
* If duct height is <15" (381 mm), tube quantities may need to increase to compensate for reduced capacity of short tubes. Consult DRI-STEEM or see Dri-calc for the correct calculation.

Figure 28-1:
Rapid-sorb dimensions



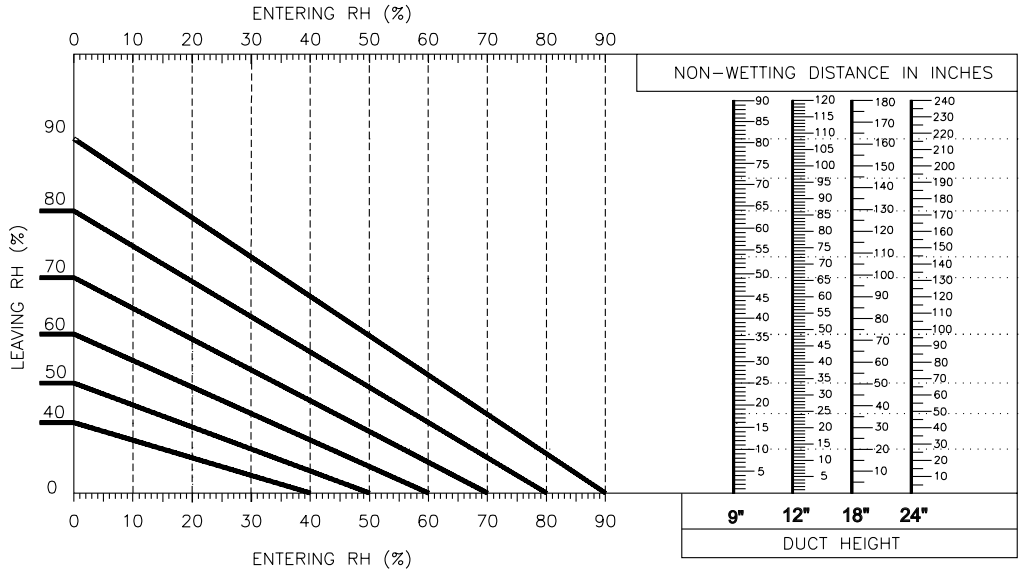
Note:
Add water seal to condensate drain as shown in the Dri-calc Installation Guides or the Vaporstream Installation, Operation, and Maintenance manual.

Table 28-1:
Rapid-sorb dimensions

Dimension	Description	Inches (mm)
A	Face width	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
B	Face height	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
C	Steam inlet	Determined by humidifier maximum capacity
D	Condensate drain	¾" pipe thread (DN20)
E	Distance from tube center to inside of duct or AHU wall	4.5" (114) minimum
F	Distance from outside of duct or AHU wall to end of Rapid-sorb leader	4.5" (114) minimum

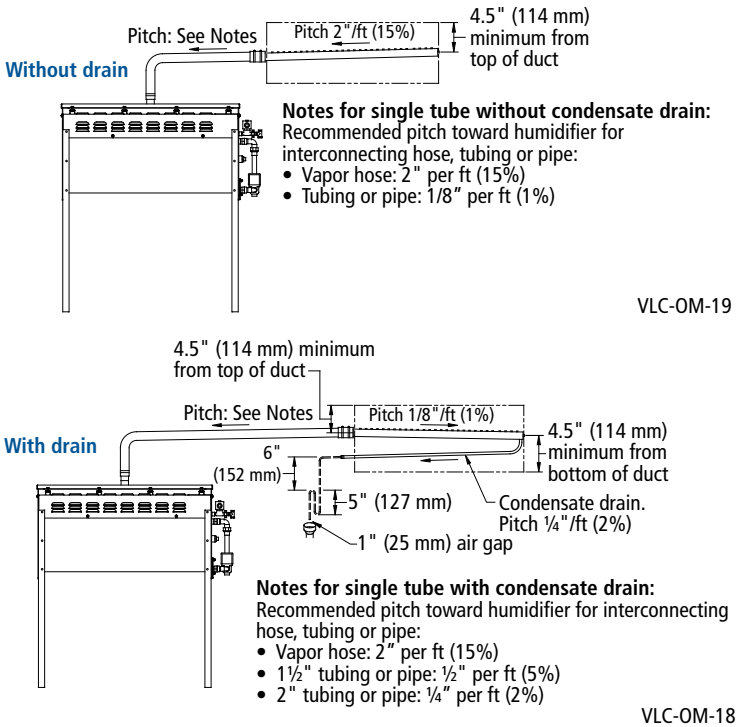
Note:
All Rapid-sorb units are custom-sized and field-assembled to fit the duct or air handler. Consult DRI-STEEM for sizes larger or smaller than those listed above.

Figure 29-1: Single tube non-wetting distances



Note:
The above data applies to all air velocities up to 1,500 fpm (7.6 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH.

Figure 29-2: Single tube without and with condensate drain


Without drain
Pitch: See Notes
Pitch 2"/ft (15%)
4.5" (114 mm) minimum from top of duct
With drain
4.5" (114 mm) minimum from top of duct
Pitch: See Notes
Pitch 1/8"/ft (1%)
6" (152 mm)
4.5" (114 mm) minimum from bottom of duct
5" (127 mm)
Condensate drain. Pitch ¼"/ft (2%)
1" (25 mm) air gap

Notes for single tube without condensate drain:
Recommended pitch toward humidifier for interconnecting hose, tubing or pipe:
- Vapor hose: 2" per ft (15%)
- Tubing or pipe: 1/8" per ft (1%)

VLC-OM-19

Notes for single tube with condensate drain:
Recommended pitch toward humidifier for interconnecting hose, tubing or pipe:
- Vapor hose: 2" per ft (15%)
- 1½" tubing or pipe: ½" per ft (5%)
- 2" tubing or pipe: ¼" per ft (2%)

VLC-OM-18

Table 29-1: Single tube capacities

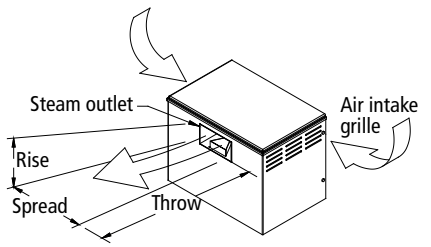
Tube size		Capacity			
		Without drain		With drain	
inches	DN	lbs/hr	kg/h	lbs/hr	kg/h
1½	40	28.4	13	56.8	25.8
2	50	56.8	25.8	85.2	38.6

Table 30-1:
SDU-E minimum non-wetting distances

kW	Maximum steam capacity		40% RH @ 70 °F (21 °C)						50% RH @ 70 °F (21 °C)						60% RH @ 70 °F (21 °C)					
			Rise		Spread		Throw		Rise		Spread		Throw		Rise		Spread		Throw	
	lbs/hr	kg/h	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
2	6	2.7	1.0	0.3	1.0	0.3	5.0	1.5	1.5	0.5	1.5	0.5	6.5	2.0	2.5	0.8	2.5	0.8	7.5	2.3
4	12	5.4	1.0	0.3	1.0	0.3	5.0	1.5	1.5	0.5	1.5	0.5	6.5	2.0	2.5	0.8	2.5	0.8	7.5	2.3
6	18	8.2	1.0	0.3	1.0	0.3	5.0	1.5	1.5	0.5	1.5	0.5	6.5	2.0	2.5	0.8	2.5	0.8	7.5	2.3
8	24	10.9	1.0	0.3	1.0	0.3	5.5	1.7	1.5	0.5	1.5	0.5	6.5	2.0	2.5	0.8	2.5	0.8	7.5	2.3
10	30	13.6	1.5	0.5	1.5	0.5	6.0	1.8	2.0	0.6	2.0	0.6	7.0	2.1	3.0	1.0	3.0	1.0	8.0	2.5
12	36	16.3	1.5	0.5	1.5	0.5	6.0	1.8	2.0	0.6	2.0	0.6	7.0	2.1	3.0	1.0	3.0	1.0	8.0	2.5
14	42	19.1	2.0	0.6	2.0	0.6	7.0	2.1	2.0	0.6	2.0	0.6	7.0	2.1	3.0	1.0	3.0	1.0	9.0	2.7
16	48	21.8	2.0	0.6	2.0	0.6	7.0	2.1	2.0	0.6	2.0	0.6	7.0	2.1	3.0	1.0	3.0	1.0	9.0	2.7
21	63	28.6	2.0	0.6	2.0	0.6	7.5	2.3	2.5	0.8	2.5	0.8	10.0	3.0	3.0	1.0	3.0	1.0	12.0	3.7
25	75	34.0	2.0	0.6	2.0	0.6	8.0	2.5	2.5	0.8	2.5	0.8	10.5	3.2	3.5	1.1	3.5	1.1	12.5	3.8
30	90	40.9	2.0	0.6	2.0	0.6	8.0	2.5	2.5	0.8	2.5	0.8	10.5	3.2	3.5	1.1	3.5	1.1	12.5	3.8
34	102	46.3	2.0	0.6	2.0	0.6	8.0	2.5	2.5	0.8	2.5	0.8	10.5	3.2	3.5	1.1	3.5	1.1	12.5	3.8

Notes:
- Surfaces or objects directly in the path of vapor discharge may cause condensation and dripping.
- To avoid steam impingement on surrounding areas, observe the minimum non-wetting dimensions in this table.
- Rise: The minimum non-wetting height above the steam outlet of the SDU-E.
- Spread: The minimum non-wetting width from the steam outlet of the SDU-E.
- Throw: The minimum non-wetting horizontal distance from the steam outlet of the SDU-E.

Figure 30-1:
SDU-E rise, spread and throw



DC-1027

Table 30-2:
Space Distribution Unit specifications**

SDU model	Maximum capacity		Shipping weight		Amps at 120V (50/60 Hz)	Horsepower	cfm	m^3/s	dB*
	lbs/hr	kg/h	lbs	kg					
SDU-E	102	46.3	61	28	2.07	1/8	545	0.26	64
SDU-I	30	13.6	68	31	3.20	1/5	760	0.36	58

Notes:
* Measurement taken 6.5' (2 m) in front of SDU cabinet.
** For visible vapor to be absorbed completely within the SDU-I unit before being discharged as humidified air, room air must be 45% RH or less. Trying to maintain greater than 45% RH will cause visible vapor and potential for moisture collection on the discharge grille.

Area-type dispersion

Table 31-1:
Area-type (evaporative steam) minimum non-wetting distances*

Maximum steam capacity		60 °F (16 °C)																	
		30% RH						40% RH						50% RH					
		Rise		Spread		Throw		Rise		Spread		Throw		Rise		Spread		Throw	
lbs/hr	kg/h	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
50	20	1.0	0.3	2.0	0.6	6.0	1.8	1.0	0.3	2.0	0.6	6.0	1.8	1.0	0.3	2.5	0.8	6.0	1.8
75	34	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	4.0	1.2	8.0	2.4
100	45	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	5.0	1.5	10.0	3.1
150	68	6.0	1.8	5.0	1.5	12.0	3.7	6.0	1.8	5.0	1.5	12.0	3.7	6.0	1.8	5.0	1.5	12.0	3.7
200	90	7.0	2.1	7.0	2.1	13.0	4.0	8.0	2.4	7.0	2.1	14.0	4.3	8.0	2.4	7.0	2.1	14.0	4.3
225	102	7.0	2.1	7.0	2.1	13.0	4.0	8.0	2.4	7.0	2.1	14.0	4.3	8.0	2.4	7.0	2.1	14.0	4.3
250	110	8.0	2.4	8.0	2.4	15.0	4.6	9.0	2.7	9.0	2.7	16.0	4.9	9.0	2.7	9.0	2.7	16.0	4.9
285	130	9.0	2.7	9.0	2.7	17.0	5.2	10.0	3.1	10.0	3.1	18.0	5.5	10.0	3.1	10.0	3.1	18.0	5.5
300	136	9.0	2.7	9.0	2.7	17.0	5.2	10.0	3.1	10.0	3.1	18.0	5.5	10.0	3.1	10.0	3.1	18.0	5.5
Maximum steam capacity		70 °F (16 °C)																	
		30% RH						40% RH						50% RH					
		Rise		Spread		Throw		Rise		Spread		Throw		Rise		Spread		Throw	
lbs/hr	kg/h	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
50	20	1.0	0.3	1.5	0.5	4.0	1.2	1.0	0.3	2.0	0.6	4.0	1.2	1.0	0.3	2.0	0.6	4.0	1.2
75	34	2.0	0.6	2.0	0.6	6.0	1.8	2.0	0.6	2.5	0.8	6.0	1.8	2.0	0.6	2.5	0.8	6.0	1.8
100	45	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4
150	68	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	4.0	1.2	11.0	3.4	4.0	1.2	4.0	1.2	11.0	3.4
200	90	5.0	1.5	5.0	1.5	11.0	3.4	5.0	1.5	5.0	1.5	12.0	3.7	5.0	1.5	5.0	1.5	12.0	3.7
225	102	5.0	1.5	5.0	1.5	11.0	3.4	5.0	1.5	5.0	1.5	12.0	3.7	5.0	1.5	5.0	1.5	12.0	3.7
250	110	6.0	1.8	6.0	1.8	12.0	3.7	6.0	1.8	6.0	1.8	13.0	4.0	6.0	1.8	6.0	1.8	14.0	4.3
285	130	7.0	2.1	7.0	2.1	14.0	4.3	7.0	2.1	7.0	2.1	15.0	4.6	7.0	2.1	7.0	2.1	16.0	4.9
300	136	7.0	2.1	7.0	2.1	14.0	4.3	7.0	2.1	7.0	2.1	15.0	4.6	7.0	2.1	7.0	2.1	16.0	4.9

Notes:
* With fan on high speed
Rise: Minimum non-wetting height above the steam chute
Spread: Minimum non-wetting width from the steam chute
Throw: Minimum non-wetting horizontal distance from the steam chute

Figure 31-1:
Area-type rise, spread, throw

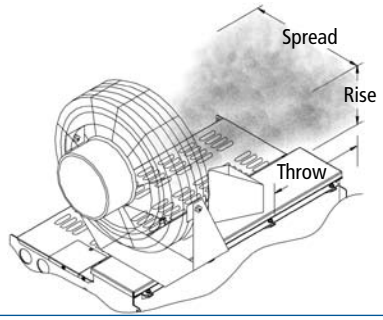


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Table 31-2:
Area-type electric fan specifications*

Motor	120 V, 50/60 Hz
Blade diameter	18" (457 mm)
Speeds	3
Control	Rotary switch
cfm (high speed)	3190
m^3/s (high speed)	1.51
rpm (high speed)	1500
Amps (high speed)	1.52

Vaporstream accessories

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